

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. - 7. (canceled).

8. (previously presented): : A method for detecting surface defects on a metal product as it is being continuously cast, using an eddy current sensor of the separate transmitter/receiver type having rows of contiguous aligned measurement cells that are separately controllable by multiplexing, the product to be inspected undergoing a traveling movement relative to the sensor, wherein, said sensor comprising a matrix of measurement cells distributed in rows and columns, and said matrix having at least first and second parallel rows of at least three measurement cells each, the multiplexing is activated in successive control steps in such a way that:

- in a given control step, first and second cells in each row are activated, these cells being separated from each other by at least one inactive measurement cell, the first cell being activated so as to generate eddy currents on the surface of said metal product and the second being activated so that it detects the eddy currents generated by the first cell, the flow of the eddy currents on the surface being modified by the presence of surface defects, and, at predetermined time intervals, the two activated cells are inactivated and said control step is repeated with two following cells, which are offset by at least one cell along the same row relative to the two inactivated cells, and so on, until the surface region to be inspected has been checked; and

- wherein said control step is carried out simultaneously for the first and second rows of cells, said first cells of each row belonging to just one column and said second cells of each row

also belonging to just another column, said second cells of each row being configured so as to produce signals of opposite polarity when a defect is detected.

9. (currently amended): A system for detecting surface defects on a metal product as it is being continuously cast, comprising a sensor for detecting surface defects by eddy currents, of the separate transmitter/receiver type comprising a matrix of measurement cells distributed in rows and columns, said matrix having at least first and second parallel rows of at least three measurement cells each that are contiguous and controllable, and a unit for controlling the sensor, by multiplexing, suitable for controlling said measurement cells, each measurement cell being capable of generating eddy currents on the surface of said metal product to be inspected and, alternately, of detecting eddy currents on said surface, said system being wherein the control unit with multiplexer is capable of controlling:

- first and second cells in each row, which are separated from each other by at least one inactive measurement cell, the first cell being activated so as to generate eddy currents on the surface of said metal product and the second being activated so as to detect the eddy currents generated by the first cell, the flow of the eddy currents on the surface being modified by the presence of surface defects; and

- ~~- the cells of the second row in the same way as the cells of the first row.~~ - the at least three measurement cells of the second of said first and second parallel rows in the same way as the at least three measurement cells of the first of said first and second parallel rows.

10. (previously presented): The system as claimed in claim 9, wherein the sensor includes a base in which at least three aligned rows are housed and in that the base is placed at a distance of at least three millimeters from the surface on which the surface defects have to be detected.

11. (previously presented): : The system as claimed in claim 10, further including a device for cooling the base.

12. (previously presented): The system as claimed in claim 11, wherein the cooling device includes a circuit for circulating a coolant along the base.

13. (previously presented): The system as claimed in claim 12, wherein the cooling device includes at least one ceramic plate placed facing the base so as to leave a space for the coolant circulation circuit.

14. (previously presented): The system as claimed in claim 9, wherein each cell of the first row is contiguous with a cell of the second row and can be configured so as to deliver a signal of opposite polarity to that delivered by the contiguous cell of the second row, and in that the control unit is suitable for configuring the second cells of the first and second rows so that they deliver signals of opposite polarity.